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## Part-time workers' responses to electronic performance monitoring

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**Abstract:** The present study examined whether the presence of electronic performance monitoring at work would yield lower perceptions of control, job satisfaction, and commitment among part-time employees. This group of employees has not been traditionally examined in electronic monitoring research. We also tested whether the presence of electronic performance monitoring indirectly decreases citizenship behaviours and increases turnover behaviours through perceived control, satisfaction, and commitment. The sample included 208 students who worked part-time (no more than 30 hours per week). The data were collected using a two-part survey which assessed job attitudes, perceived control, intentions and behaviours, as well as type of monitoring being used in the workplace. The presence of electronic performance monitoring had a significant negative relationship with perceived control and job attitudes. Electronic monitoring indirectly predicted more self-reported turnover behaviour through perceived control, job attitudes, and intentions. The results suggest that monitoring might be an important situational factor that negatively influences employee attitudes and behaviours. The findings suggest that lower working hours within the organisation do not necessarily inure these employees to the effects of monitoring compared to their full-time colleagues, particularly when the performance standards are similarly demanding.

**Keywords:** electronic performance monitoring, part-time work, job satisfaction, perceived control, turnover.

## Resposta dos trabalhadores a tempo parcial à monitorização eletrónica de desempenho

**Resumo:** O presente estudo foi dedicado a analisar se a presença de monitorização eletrónica de desempenho no trabalho proporciona percepções mais reduzidas de controle, mais satisfação no trabalho e comprometimento entre os trabalhadores a tempo parcial. Este grupo de funcionários não tem sido tradicionalmente analisados na investigação de monitorização eletrónica. Foi também testado se a presença de monitorização eletrónica de desempenho diminui indiretamente comportamentos de cidadania e promove taxa de substituição de funcionários mais elevada, devido aos níveis de controle percebido, satisfação e compromisso. A amostra incluiu 208 estudantes que trabalhavam a tempo parcial (não mais de 30 horas por semana). Os dados foram recolhidos com recurso à técnica 'two-part survey', que permitiu avaliar as atitudes de trabalho, controle percebido, intenções e comportamentos, bem como o tipo de monitorização a ser usado no local de trabalho. A presença de monitorização eletrónica de desempenho teve uma relação negativa significativa com o controle percebido e atitudes de trabalho. A monitorização eletrónica previu indiretamente um comportamento de taxa de substituição de funcionários auto relatado por meio do controle percebido, atitudes de trabalho e intenções. Os resultados sugerem que a monitorização pode ser um importante fator situacional que influencia negativamente as atitudes e comportamentos dos funcionários. Revelam também que horários de trabalho mais reduzidos dentro da organização não aliviam necessariamente os funcionários dos efeitos da monitorização, em comparação com os seus colegas a tempo integral, especialmente quando os padrões de desempenho são igualmente exigentes.

**Palavras-Chave:** monitorização eletrónica de desempenho, trabalho a tempo parcial, satisfação no trabalho, controle percebido, taxa de substituição de funcionários.

## 1. Introduction to electronic performance monitoring

As the workplace becomes increasingly technologically dependent, electronic performance monitoring (EPM) via computer-mediated tools and software applications has become a popular feature of work environments. EPM can be defined as the use of electronic instruments or devices to collect, store, analyse, and report individual (or group) actions or performance (Nebeker & Tatum, 1993). Examples of common uses of EPM include the monitoring of transactions made within a given time frame (Carayon 1993), monitoring speed and accuracy of employees entering data (Aiello & Kolb, 1995; Nebeker & Tatum, 1993), handling automated telephone calls, and processing customer requests (Westin, 1992). Electronic monitoring at work can vary in what behaviours will need to be monitored and to what degree. Such behaviours can be directly related to performance (e.g., recorded sales transactions) or more indirect (e.g., attendance or login times). EPM can provide important information about employee performance progress, employee or team needs for development, candidates for termination or promotion, and compliance with security and other policies (Aiello & Kolb, 1995). We define performance monitoring in this context in the broadest possible sense as the use of technology to monitor employee behaviours on specific tasks, contextual or adaptive performance, or counterproductive work behaviour, each of which reflects a different aspect of individual work performance (Koopmans et al., 2011).

The introduction of EPM into the workplace environment is usually expected to simply improve the specific procedures that are directly replaced by EPM. On the surface, implementing EPM might seem to be a simple exchange of human observations for an electronic tool to complete the same observations with more flexibility and accuracy. Supervisors and organizations can use the flexibility of EPM techniques to determine when, how frequently (Chen & Ross, 2007; Wells, Moorman, & Werner, 2007), or how conspicuously they monitor employee behaviour (Stanton, 2000b). Using traditional monitoring, individual supervisors can observe only a limited number of employees and processes. By comparison, EPM data are more comprehensive, detailed, and objective (Aiello & Kolb, 1995; Stanton, 2000b). Some research showed no evidence that EPM provides any significant benefits over traditional monitoring (Aprill, 1999; Nebeker & Tatum, 1993). Of most concern, the use of EPM might produce negative outcomes in work environments. Wells et al. (2007) suggested that electronic monitoring by its very nature can be both unobtrusive and continuous, making it both stressful and threatening to employees.

### 1.2 EPM relationships with perceived control and job attitudes

A leading reason for negative reactions to EPM is that employees might experience a sense of having less control in terms of how they choose to perform their job-related duties (Carayon, 1994). The current literature on EPM and employee reactions seems to suggest that EPM can decrease the extent to which employees are able to organise work activities according to their own preferences. This suggests that EPM can impose a structure on how tasks are organised and performed. The resulting lack of control may alter the balance between task demands and worker's resources by changing basic work dimensions such as work load and task control, and thus increasing work stress (Schleifer, Galinsky & Pan, 1995).

Past research suggests that EPM can reduce employees' perceived control by reducing their autonomy, task control, and control over work pace. For instance, EPM has been shown to interfere with an employee's sense of autonomy and control over job activities, social support, and perception of job demands and workload (Smith et al., 1981; Stanton & Julian, 2002). This may be even more likely in part-timers as temporary workers are less likely to have autonomy (Goudswaard & Andries, 2002) or more monotonous (Hall, 2006). Similarly, Schleifer et al. (1995) argued that EPM reduces task control and, as a consequence, disrupts the balance between task demands and worker resources. Research has further shown that being monitored on the job tends to intensify stress for workers (Aiello & Kolb, 1995) by increasing work pace (Westin, 1992). We therefore expect that when EPM affects employees' ability to select their own pace, break times, autonomy, work partners, and preferred work styles, employees also will feel they have less control in their work environments. These circumstances suggest that EPM may be particularly compatible with the type of work that part-time employees are tasked with, creating a potential that EPM influences part-time workers' attitudes, control and behaviours, despite their part-time and potentially temporary time at work.

**H1:** The presence of electronic monitoring will predict lower levels of perceived control in part-time employees.

EPM may also have implications for job attitudes. Electronically monitored employees might form expectations of how the recorded information will be used, which in turn can influence attitudes. If employees believe that the EPM system is being used to help them develop their skills, they may be more accepting of the system, satisfied, and committed (Urbaczewski, 2000; Wells et al., 2007). If the use of EPM data are not known or assumed to be for non-supportive reasons, EPM can adversely influence both job satisfaction and perceived social support (Kolb & Aiello, 1996; Stanton & Julian, 2002).

Electronic monitoring also might be indirectly related to job attitudes through lower perceived control. Higher levels of perceived control at work are also associated with higher job satisfaction and commitment (Spector, 1986; Lee & Brand, 2005). Several researchers have linked EPM to lower feelings of control, which in turn negatively affected job and task satisfaction (Greenberger et al., 1989; Smith et al., 1992; Stanton & Barnes-Farrell 1996). Similarly, Amick and Celentano (1991) reported that machine-paced work was associated with increased perceived job demands, reduced autonomy, and reduced job satisfaction among postal workers (also see Aiello & Svec, 1993). Taken together, the literature suggests that EPM should have negative consequences for perceived control and job attitudes, characteristics that directly affect performance.

**H2:** Electronic monitoring will indirectly predict negative job attitudes (a latent construct indicated by lower job satisfaction and affective commitment) through decreased perceived control among part-time employees.

### **1.3 EPM relationships with employee intentions and behaviours**

According to the Theory of Planned Behaviour (Ajzen, 1991, 2002), decreased perceptions of control and negative job attitudes should predict more negative job intentions and behaviours among employees. Lower job satisfaction and perceived control

likely contributes to negative employee behaviours such as more turnover (Lucas, Babakus, & Ingram 1990; Mobley, 1977; Shore & Martin, 1989) and less organizational citizenship behaviours (Mehboob & Bhutto, 2012). We expect that job attitudes will be more negative to the extent that perceived control decreases. We further expect that negative job attitudes will predict negative intentions, and those intentions would predict less positive employee behaviours (such as organisational citizenship behaviours, OCBs) and more negative employee behaviours (turnover).

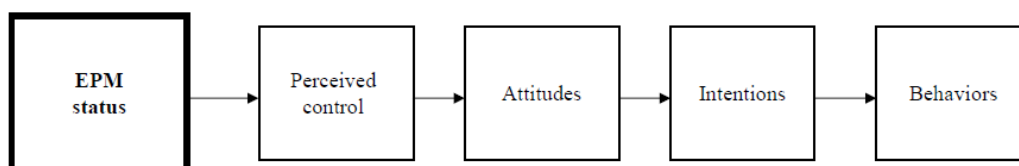
We consider organisational citizenship behaviours (OCBs) first. OCBs are viewed as contextual performance indicators (Borman & Motowidlo, 1993). Moreover, OCBs are an important and widely prized employee behaviour that organisations seek to maintain and increase. Researchers suggest that EPM may have a negative influence on OCBs (Stanton & Weiss, 2000). Niehoff and Moorman (1993) found that frequent supervisory (not traditional) observation was negatively related to OCBs including altruism, courtesy, conscientiousness, and civic virtue. These findings may be the result of reduced perceived control over the work autonomy and pacing, leading to fewer opportunities for social exchanges (for more information, see Cropanzano & Mitchell, 2005) by.

EPM may hence also influence turnover intention (see Wayne et al., 1997). Although research has not substantiated a causal link between EPM and turnover (Stanton 2000a), there is some evidence supporting a relationship between these variables. As EPM is often individually targeted, it may increase employees' sense of isolation. Batt, Colvin and Keefe (2002) also summarized research, coming to the conclusion that higher turnover is associated with standardization and simplification of jobs, which are also components affected by EPM. Moreover, some research has shown that lower satisfaction associated with more performance monitoring increased turnover likelihood among employees (Chalykoff & Kochan, 1989; Harrison, Newman, & Roth, 2006; Lambert, 2006). Similarly, decreased affective organisational commitment has been shown to predict intention to quit (Lambert, 2006; Lum et al., 1998; Porter, Crampon, & Smith, 1976; Somers, 1995; Vandenberghe & Bentein, 2009; Wasti, 2003). As expected, turnover intentions are strongly linked to voluntary turnover behaviours (Chau et al., 2009; van Chen, Hui, & Sego, 1998; van Breukelen, van der Vlist, & Steensma, 1994). This leads us to propose the following hypotheses:

**H3:** Electronic monitoring will indirectly predict more turnover intentions (a) and less citizenship intentions (b) through reduced perceived control and negative job attitudes.

**H4:** Electronic monitoring will indirectly predict more turnover behaviours (a) and less citizenship behaviours (b) through reduced perceived control, negative job attitudes, and stronger intentions to engage in the behaviours.

Taken together, these hypotheses are visualised in model below (Figure 1).



**Figure 1 - Proposed relationship between EPM status and variables**

*Note. Attitudes include job satisfaction and affective commitment. Intentions and behaviors include those related to turnover and organizational citizenship.*

## 1.4 EPM amongst part-time workers

We believe that much can be learned about workplace behaviours and effects if the research considers part-time workers such as student workers. They represent an important percentage of the work force. Davis (2012) reported the following statistics regarding the employment status of students. Of the 19.7 million students aged 16 years and older, 72% were working (20% full-time). Amongst the 4.1 million graduate students in the USA, 82% worked while studying (almost half full-time). Similar statistics were reported by EUROSTAT (2011). Around 6.9 million young Europeans aged 18-24 in 2009 (in EU27) were working while studying. In addition, 11% of students in OECD countries between the ages of 15 and 29 years old were combining both work and study in 2010 (an average computed across all OECD), with significantly higher number also being reported for different countries (OECD, 2012).

Although the nature of the relationships between job attitudes and behaviours might be consistent across full-time and part-time employees, the extent to which EPM in the work environment affects employee attitudes and behaviours cannot be generalized from full-time workers to part-time workers without empirical investigation. Part-time work may not feature the permanency or the continuity of regular employment relationships (De Cuyper et al., 2008). De Cuyper et al. (2008) further suggested that the influence of work stressors may be pronounced due to the temporary nature of employment, which may then result in more negative job attitudes. On the other hand, part-time workers could be less affected by the introduction of EPM into the workplace because they may not be as invested in or dependent on their work.

One of the challenges for part-time employees may be the limited opportunities to build relationships with others. EPM may further restrict opportunities for social exchanges (see also Molm, 2003). If the commitment is temporary, the relationship between employee and organisation may stay superficial (see more work on this by Bishop et al., 2000). This may therefore also influence the opportunity and willingness of individuals to engage in OCBs. Past research has also found a relationship between part-time employment status and higher turnover (e.g., Toren et al., 2012; Wittmer & Martin, 2011), particularly among students and involuntary part-timers (Maynard, Thorsteinson, & Parfyonova, 2006). However, just being part-time does not necessarily mean that these employees are more or less satisfied or committed to work than their full-time colleagues (Maynard et al., 2006; Martin & Sinclair, 2007) as other variables may determine turnover, such as the motives for working part-time (e.g., studying or raising a family).

The present study specifically examines the influence of the presence of EPM on job attitudes and behaviours among part-time employees. We believe that the experience of part-time student workers is worth exploring in monitored and traditionally monitored work environments, particularly because their work experience at the beginning of their working life could have an influence on their perspective on different careers and the role of technology in the workplace.

## 2. Method

### 2.1 Participants

**Recruitment.** Undergraduate students enrolled in psychology and communications courses at a University in the Midwest of the USA were invited to participate in an online,

two-part survey in exchange for research credits. The research invitation was either announced in class or circulated to the students by the faculty via email. Participation was voluntary and open to all students regardless of current working status. All students were given a two week window to complete the first and then the second part to avoid larger organisational or personal events from influencing the perceptions of employees. The first part was completed by 294 and the second part was completed by 272 students. The preliminary and combined data set included 243 student participants. We further excluded all participants who worked more than 30 hours per week in line with past research practices using part-time work samples (see Maynard et al., 2006; Caputo & Cianni, 2002; Feldman, 1990). A total of 208 participants met the inclusion criterion of part-time employment. The participants who participated in just one of the two surveys were not statistically different in age, sex or working hours from other participants.

**Final sample characteristics.** The final sample size included 208 participants who described their roles as customer-oriented ( $n = 121$ , 58.2%), administrative ( $n = 23$ , 11.1%), technical ( $n = 12$ , 5.8%), managerial ( $n = 7$ , 3.4%), manufacturing ( $n = 2$ , 1.0%), or selected "other" ( $n = 43$ , 20.7%) as their job role (defined as a combination of categories). The sample comprised 95 individuals who reported not being monitored electronically at all (45.7%) and 113 (54.3%) who indicated they were monitored electronically.

The traditional monitoring group (TM) included 27 male and 67 female participants (1 missing value for sex) between 18 to 42 years old. Average age was 21.74 years ( $SD = 3.03$ ). Three quarters (83.2%) worked up to 20 hours per week; 16.7% worked 21 to 30 hours per week. Participants had been working in their current job for up to a year ( $n = 38$ , 41.3%), with significant numbers having worked for the same organisation for two years ( $n = 22$ , 23.9%), three years ( $n = 17$ , 18.5%), and four years ( $n = 7$ , 7.6%). The maximum was 7 years. When asked about the job type, 41.1% indicated that their job was customer-oriented, 10.5% administrative, 8.4% technical, 2.1% managerial, 2.1% in manufacturing, and 35.8% other (a combination of the other categories).

The EPM group included 27 male and 86 female participants between the age of 18 and 31 years old. Average age was 21.67 ( $SD = 2.07$ ). Two thirds of participants worked up to 20 hours per week (66.4%), 33.6% worked up to 30 hours a week. Participants had been working in their current job for up to a year ( $n = 42$ , 37.2%), with significant numbers having worked for the same organisation for two years ( $n = 26$ , 23.0%), three years ( $n = 22$ , 19.5%), and four years ( $n = 9$ , 8.0%). Tenure ranged from 1 to 8 years. Three quarters (72.6%) indicated that their job was customer-oriented. The remainder of this sample occupied to 11.5% administrative, 3.5% technical, 4.4% in managerial and 8.0% other roles (a combination of the other categories).

The two subsamples were similar in terms of age ( $F(1,207) = .0249$ ,  $p = .88$ ) and tenure in current place of employment ( $F(1,204) = 1.140$ ,  $p = .29$ ). Two differences arose. First, we observed a difference in average working hours ( $F(1,206) = 10.131$ ,  $p = .002$ ). The EPM sample worked more hours per week ( $M = 19.25$ ,  $SD = 6.35$ ) than the traditionally monitored group ( $M = 16.35$ ,  $SD = 6.78$ ). Number of hours working per week was positively related to OCB intentions ( $r = .144$ ,  $p = .038$ ) and behaviours ( $r = .213$ ,  $p = .002$ ). Thus, number of hours working per week was used as a covariate when predicting OCB intentions and behaviours in the hypothesis tests. The job type was significantly related to both EPM status and several outcome variables, such that part-time workers in customer service-oriented job roles ( $n = 121$  out of 208, 58.2%) were more likely to experience EPM ( $n = 82$  out of 121) than those workers who were not in those types of

roles ( $n = 31$  out of 87). Due to this unexpected difference between EPM and traditional monitoring groups and the possibility that the relationships within our proposed model might differ by role, customer service role will be tested as a moderator in an exploratory analysis.

## 2.2 Procedure

The survey was conducted in two parts with the first part administered two weeks prior to the second part. In the first part, participants completed the measures for perceived control, job attitudes, and intentions. Age, job types, organisation type, and other demographics were collected at this stage. Organisation type was coded by categorizing organisations along different types to control for organisation-type differences: food services/hospitality, retail/service, financial services, health/ rehabilitation, education/ information, and unknown organisation type. The second part captured behaviours. Participants provided codes to match from the first survey with the second survey. The reliability coefficients for all measures are listed in Table 1.

## 2.3 Measures

A variety of self-report measures were utilised.

**Perceived control.** Perceived control was assessed using a six-item scale on work control (Tetrick & LaRocco, 1987). An example item is: "To what extent do you have input in deciding what tasks or parts of tasks you will do?" To be consistent with other measures in the survey, the original response scale was revised from a 7-point to a 5-point scale, ranging from (1) "not at all" to (5) "very often" to provide participants with a consistent response scale format in order to reduce the risk of cognitive errors. Higher mean scores across the items indicated greater perceived control over how employees do their work.

**Attitudes.** Two measures were used to assess employee attitudes. For job satisfaction, the short four-item scale by Brayfield and Rothe (1951) was selected. An example item is: "Most days I am enthusiastic about my work." Responses were recorded on 6-point scales ranging from (1) "strongly disagree" to (6) "strongly agree." A composite job satisfaction score was computed by creating the mean for all items. Higher scores indicated higher job satisfaction. The six-item affective commitment scale was drawn from Meyer, Allen, and Smith (1993). An example item is: "I really feel as if this organization's problems are my own." The original scale featured a 7-point answering scale which was reduced to the same 5 points as the previous measure. Item scores were averaged with higher scores indicating greater affective commitment.

**Intentions and behaviours.** The study also included measures to assess intentions and behaviours related to turnover and organisational citizenship. Turnover intention was assessed using seven items, all of which were based on two validated scales. The first item set included three items proposed by Bozeman and Perrewé (2001). The second set used the four-item turnover propensity subscale proposed by Chalykoff and Kochan (1989). One of these four items was rephrased slightly to capture intentions rather than behaviour (from "I often follow up on job leads I've heard about" to "I intend to follow up on job leads I hear about"). An example item from the turnover intention subscale is: "I will probably look for a new job in the near future." An example item for turnover behaviour is:



"I have already searched for a new job to take in the near future." The answer options were (1) "strongly disagree" to (5) "strongly agree."

The three-item OCB behaviour measure was derived from the conscientiousness subscale of the measure by Podsakoff et al. (1990). The items were rephrased to be in the first person. An example item is: "I intend to improve my attendance record at work." Also, the three items assessing OCB intentions were rephrased versions of the OCB behaviour items. An example item is: "I do not take extra breaks." The response scale for both measures range from (1) "strongly disagree" to (5) "strongly agree." Higher mean scores on each measure indicated greater intentions of OCBs and actual displays of OCBs, respectively. We chose the conscientiousness items as these OCBs as this did not rely on interactions with other, as we could not be sure our sample would work with a team (as in altruism, sportsmanship, or virtue). This also means that engaging in these OCBs was something the individual could influence independently from others.<sup>1</sup>

**Monitoring trends.** EPM status was determined by the reported presence or absence of any EPM employed in the workplace. These included (based on literature and the real-life practices employed in a loans business which used extensive EPM to monitor their staff's performance): monitoring of data entry speed, recording of phone as well as chat response times/call length and details of contact (e.g., phone number), location monitoring via GPS, logging in and off at work, use of passwords to access servers/customer files/other resources, and cameras at work station, in the arrival or departure areas (overview for role-specific monitoring is presented in Table 1). Monitored employees reported a minimum of two different monitoring techniques being employed, the most common ones being the use of cameras in various areas either at the work station (n = 92) or arrival/departure areas of the worksite (n = 65), the recording of log-in/log-off times at work (n = 75), and location monitoring (n = 76).

**Table 1 - Percentage of employees within occupational category being monitored electronically**

Monitoring (n = 113)	Technical	Adminis- trative	Customer- oriented	Managerial	Other	Percentage monitored
Logging in and off at work (85)	100.0%	69.2%	76.8%	60.0%	66.7%	75.2%
Entry of data (26)	0.0%	30.8%	25.6%	20.0%	0.0%	23.0%
Location monitoring (32)	0.0%	30.8%	31.7%	0.0%	22.2%	28.3%
Use of passwords (69)	50.0%	69.2%	61.0%	60.0%	55.6%	61.1%
Phone response times/call length (13)	0.0%	15.4%	12.2%	0.0%	11.1%	11.5%
Phone numbers recorded (8)	0.0%	0.0%	8.5%	0.0%	11.1%	7.1%
Chat response times (5)	0.0%	15.4%	2.4%	0.0%	11.1%	4.4%
Cameras at work stations (96)	100.0%	61.5%	89.0%	80.0%	77.8%	85.0%
Arrival/departure cameras (68)	75.0%	53.8%	61.0%	60.0%	55.6%	60.2%

<sup>1</sup> Confirmatory factor analyses of the subscales measuring intentions and behaviours supported a two-factor structure (one for intention and one for behaviour).

### 3 Results

#### 3.1 Descriptive results

The means and standard deviations for each monitoring group (TM and EPM) are provided in Table 2. The standard deviations (SDs) listed in the table suggest relatively similar distributions around the mean. Differences in means between the two groups are apparent in relation to the two job attitudes, perceived control, and turnover intention.

**Table 2 - Group means and standard deviations for the entire sample and the two groups**

	Traditional (n = 95)		EPM (n = 113)		Total (n = 208)	
	Mean	SD	Mean	SD	Mean	SD
Job satisfaction	4.28	1.07	3.95	1.06	4.10	1.08
Affective commitment	3.19	.98	2.92	.78	3.04	.88
Perceived control	3.40	.92	3.08	.92	3.23	.93
Turnover intention	3.39	1.21	3.61	1.08	3.51	1.15
Turnover behaviours	2.42	1.01	2.39	1.00	2.40	1.00
OCB intentions	3.78	.71	3.83	.72	3.80	.71
OCB behaviour	3.84	.62	3.81	.73	3.82	.68

**Table 3 - Correlations and reliability information for all scales**

	$\alpha$	1.	2.	3.	4.	5.	6.	7.
1. Job satisfaction	.86	1						
2. Affective commitment	.83	.626**	1					
3. Perceived control	.86	.505**	.518**	1				
4. Turnover intention	.80	-.265**	-.302**	-.136*	1			
5. Turnover behaviours	.70	-.053	-.077	.060	.554**	1		
6. OCB intentions	.51	.116†	.202*	.152*	.146*	.087	1	
7. OCB behaviour	.60	.205**	.284**	.255**	.100	.047	.512**	1

Note. Total N = 208. † Correlation is significant at the 0.10 level (2-tailed). \* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed).

The bivariate correlations among all variables appear in Table 3, with the reliability values listed on the diagonal. Correlations indicated a strong positive correlation between the two job attitudes. The two job attitudes were positively correlated with perceived control and OCB, and negatively with turnover intention. The intention measures (for turnover and OCB) correlated positively with their respective behaviour measure, indicating a strong relationship but not redundancy (again supporting the results of the confirmatory factor analyses conducted to ensure that items measuring intentions and behaviours were two distinct but related factors rather than loading onto a single common factor).

Although most of the measures had good reliability coefficients equal to or above .70, two measures yielded inadequate reliability estimates: the intention and behaviour measures for OCB. Both scales were very short and focused on the extent to which

participants were conscientious about time-keeping and attendance at work. It is possible that one or more of these intended and actual behaviours were not relevant or under the control of the part-time employees we sampled in this study. The low reliability of these measures limits the strength of any relationship observed with these two variables.

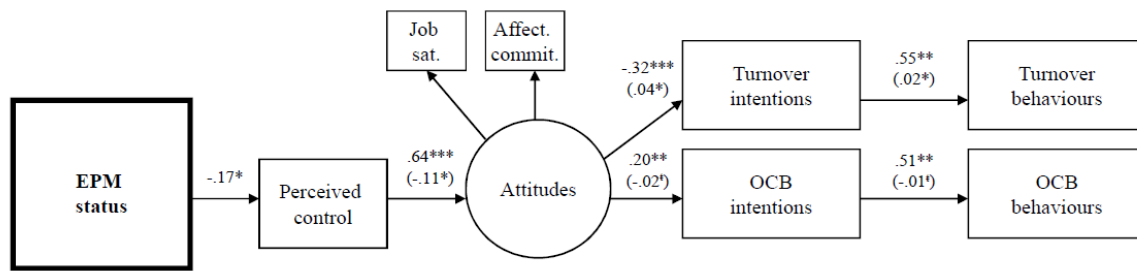
### 3.2 Hypothesis testing

We used analysis of variance to examine group differences (controlling for job type and working hours, to reduce subsample differences in hours worked between the two groups). Supporting Hypothesis 1, the results showed significantly less perceived control among those who were monitored electronically compared to those who were monitored traditionally ( $F(1,204) = 4.594, p = .022$ ). EPM status was also associated with differences in both job satisfaction ( $F(1,194) = 3.535, p = .062$ ) and affective commitment ( $F(1,204) = 4.540, p = .034$ ), thus demonstrating that EPM workers held more negative job attitudes than traditionally monitored workers in this study (Table 2). This group difference for EPM and job satisfaction became significant at  $p < .05$  once we no longer controlled for hours worked ( $F(1,205) = 4.285, p = .040$ ).

EPM status did not predict intentions or behaviours directly. Covariance structure analysis in MPLUS (v. 5) with bootstrapped standard errors (10000 iterations) tested the remaining three hypotheses. All variables except for job attitudes were manifest variables in the path model. Job attitudes were specified with a single latent construct using job satisfaction and affective commitment as indicators (with a common scale) for that variable. Given the low and nonsignificant correlations, the correlations among turnover and OCBs behaviours were fixed to 0.00; similarly, the correlations among intentions were fixed to 0.00. As noted previously, number of hours worked per week was specified as a covariate when predicting OCB intentions and behaviours. The full model with both behaviour outcomes (OCBs and turnover) showed good global fit ( $X^2 = 52.50; df = 26; CFI = .93; RMSEA = .07; BIC = 5262.55$ ). The standardized path estimates are presented in Figure 2.

Hypothesis 2 suggested that EPM will indirectly predict negative job attitudes through lower perceived control. An indirect effects model showed support for this hypothesis. The indirect effect of EPM status on attitudes through perceived control was statistically significant ( $b = -.16, \beta = -.11, p = .013$ ). Thus, EPM could indirectly affect job satisfaction and affective commitment through the decreased perceived control associated with EPM in the workplace.

In partial support of Hypothesis 3, the indirect effects of EPM status through perceived control and job attitudes was significant and positive for turnover intentions ( $b = .081, \beta = .035, p = .033$ ). However, the indirect effect to OCB intentions was not significant ( $b = -.031, \beta = .022, p = .075$ ). Hypothesis 3 was confirmed for turnover intentions but not OCB intentions in this sample.



**Figure 2 - Indirect effects model on all outcomes**

Note. All variables were specified as measured variables except for job attitudes. Job attitudes comprised job satisfaction and affective commitment. The two intentions and behaviours that were analysed in this model were turnover and organizational citizenship. Estimates are standardized. Estimates in brackets list indirect effects. Significance level: <sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Hypothesis 4 predicted that monitoring would increase turnover behaviour and decrease organisational citizenship via reduced perceived control, more negative job attitudes, and stronger intentions to engage in the behaviours. The indirect effect of monitoring through perceived control, job attitudes, and intentions was significant for turnover behaviours ( $b = .039$ ,  $\beta = .020$ ,  $p = .039$ ). The effect was not significant for OCB behaviours ( $b = -.015$ ,  $\beta = -.011$ ,  $p = .097$ ). To the extent that EPM decreases perceived control and encourages negative job attitudes, workers might demonstrate more turnover (less commitment) behaviours as an indirect consequence.

### 3.3 Exploratory analysis: Job type as moderator

Participants' reported being primarily in one of 6 job role categories: technical, administrative, managerial, manufacturing, customer service, or other. Based on preliminary results presented earlier, we specifically examined whether our proposed model functioned differently for part-time workers who held customer-oriented jobs as compared to other types of jobs.

Participants in a customer-service role ( $n = 121$ ) reported greater turnover intentions ( $M = 3.70$ ,  $SD = 1.05$ ;  $F(1,205) = 8.616$ ,  $p = .004$ ) but not greater turnover behaviours ( $M = 2.50$ ,  $SD = 1.05$ ;  $F(1,205) = 3.397$ ,  $p = .103$ ) than participants not in customer-service roles, controlling for hours worked. Relatively speaking, participants in technical, administrative or other roles ( $n = 87$ ) had lower turnover intentions ( $M = 3.24$ ,  $SD = 1.22$ ) and behaviours ( $M = 2.27$ ,  $SD = .92$ ). Importantly, those in customer-service roles reported lower control ( $F(1,205) = 12.105$ ,  $p = .001$ ,  $M = 3.04$ ,  $SD = .93$ ) and less positive job attitudes ( $F(1,205) = 5.941$ ,  $p = .016$ ,  $M = 6.89$ ,  $SD = 1.75$ ) compared to the perceived control ( $M = 3.49$ ,  $SD = .88$ ) and attitude scores ( $M = 7.50$ ,  $SD = 1.75$ ) observed in the other groups. Given the large proportion of customer-service roles represented in this sample, the results might be particularly representative of that job type.

To examine this, we specified our hypothesized model and included customer service role and the interaction between customer service role with EPM status as predictors of perceived control. The model test results supported a good fitting model ( $X^2 = 70.84$ ;  $df = 38$ ;  $CFI = .92$ ;  $RMSEA = .06$ ;  $BIC = 5520.68$ ). Importantly, the interaction between EPM

status and customer service role was statistically significant ( $b = -.53$ ,  $\beta = -.28$ ,  $p = .049$ ). This effect suggests that the negative relation between EPM status and perceived control is especially strong for workers in customer service positions. More importantly, the effect of EPM status on perceived control was not significant when workers were not in customer service roles ( $b = .10$ ,  $\beta = .05$ ,  $p = .612$ ).

The next obvious question is whether the indirect effects are also specific to customer service roles. Indirect effects analyses showed that the indirect effect of the interaction on job attitudes through perceived control was statistically significant ( $b = -.26$ ,  $\beta = -.18$ ,  $p = .042$ ). However, all remaining indirect effects of the interaction term on intentions and behaviours were not statistically significant. Therefore, the presence of EPM seemed to have uniquely negative effects on perceived control and job attitudes for part-time workers in customer service positions. However, the especially negative psychological states did not seem to show especially negative effects on intentions and behaviours. If perceived control and job attitudes are negatively affected by EPM in the workplace, the impact on intentions and behaviours might be consistent across job roles.

#### 4. Discussion

EPM increasingly is being used to supplement traditional performance monitoring techniques in the workplace. The present study relied on existing work on EPM reactions and examined the direct relationship between electronic monitoring and perceived control to examine reactions of part-time employees. In addition, this study extended past research by further examining the indirect implications of EPM for job attitudes, intentions, and behaviours. At present, no research on EPM has considered whether or not such effects also generalize to part-time employees. We first reflect on the results and then discuss these in relation to part-time employees as a target group of monitoring.

The results of the previous analyses mostly supported expectations. EPM predicted less perceived control. Importantly, EPM also showed significant indirect effects through perceived control to predict more negative job attitudes (satisfaction and commitment). These findings are in line with past research showing that reduced control also reduces job satisfaction (Greenberger et al., 1989; Smith et al., 1992; Stanton & Barnes-Farrell, 1996). In addition, via perceived control and job attitudes, EPM indirectly increased intended turnover (but not actual OCBs). Finally, we found significant indirect effects of EPM on more turnover behaviours. Electronic monitoring can affect employees' willingness to stay in the organisation and to support others in form of OCBs (Stanton & Weiss, 2000).

For turnover intentions, and turnover behaviours, we found consistent support for our expectations. These results suggest that EPM might have similar effects on attitudes and turnover behaviour among part-time employees as has been suggested to be the case among full-time employees. The indirect effect of monitoring on turnover replicates existing research that demonstrates the relationship between perceived control on turnover and lower job satisfaction on turnover.

Our study therefore demonstrates that turnover is not just a matter of a sample but also the type of work environment the part-timers experience. Since we were able to obtain our results while controlling for the number of hours worked by our participants, our results provides an important contribution to the literature on monitoring when the sample involves part-time rather than full-time employees in various different organisations and roles. This

suggests that the direct and indirect effects of monitoring via perceived control demonstrated in our results are in line with past meta-analytic results outlined by Spector (1986). The meta-analysis outlined the importance of high perceived control for job satisfaction, turnover intention and turnover. We were able to demonstrate indirect effects emanating from monitoring in the working environment via perceived control to a variety of attitudes, turnover intentions and behaviours.

#### **4.1 Implications for theory and practice**

Our findings suggests that, at least in terms of EPM practices, job attitudes might be contingent on the amount of perceived control that employees lose when an EPM system is established in the workplace. If implementing EPM in the workplace, practitioners might prioritize efforts to protect employees' perception of control over their work environment to buffer a potential negative impact on job attitudes by involving them in the discussion of monitoring, how the information is used, and to offer them opportunities to also shape how certain monitoring is applied and evaluated. Past research indicates that the extent to which employees had a voice in which aspects of their jobs and behaviours are monitored will affect their response to monitoring (Whiting, Podsakoff, & Pierce, 2008). In addition, such discussion can help all parties to learn who will be monitored and how. The extent to which monitoring is applied in a consistent fashion for all employees is an important aspect to ensure procedural and informational justice aspects of monitoring in the workplace (Stanton, 2000b).

The fact that EPM can directly and indirectly relate to negative job attitudes should raise some concerns about the impact of EPM on employee behaviours. Indeed, our study would suggest that concerns are warranted as EPM indirectly affected employee turnover behaviours through job attitudes and intentions. Practitioners can use job attitudes as a gauge for whether EPM will have negative consequences for organisational goals. Job satisfaction in particular has been shown to have a modest but consistent influence on work performance (Iaffaldano & Muchinsky, 1985; Judge et al., 2001). The benefits of using EPM must carefully be considered in light of the potentially negative psychological consequences on employees.

Another concern is the fact that technology is now a significant part of most work processes and job designs. As a result, the distinction between electronic monitoring more generally and EPM is slowly disappearing. This is particularly noteworthy when authors use the word "surveillance" rather than electronic performance monitoring when talking about performance (e.g., Ball, 2001). The discussion around surveillance and monitoring also reflects a different perspective on the role that technology has for shaping organisational practices--as a means to exert power and control. In this case, performance measurement becomes an instrument to coerce workers (e.g., Sewell, Barker & Nyberg, 2012) into performing to some standard, rather than as a means to support supervisory practice. In addition, if new monitoring technology is used to change existing work practices in such a way that tasks are broken down into small measureable units, we actually regress to more work practices that not only reduce meaningfulness, but also increase repetitiveness and potentially isolation between employees.

This also raises the issue whether it would be appropriate to limit the powers of manager to monitor all and every aspect of online or machine work of their employees, especially when the actual utility of these measures for performance management and

appraisal purposes may be limited. We need to test general assumptions, such as the suggestion that the prevalence of electronic monitoring in the modern work place and life more generally leads employees to be less concerned or influenced by the presence of electronic monitoring devices. At present, whether such a generalization is accurate for all types of workers. So as long as new technologies are being introduced into the workplace that include employee monitoring capabilities, the debate about employee monitoring at work will remain as relevant today as it was when these EPM first emerged more than thirty years ago.

A final concern arises from the implications that intensified monitoring has for the mental and physical health of employees. Although not the primary focus of this research, other studies have shown that being monitored closely on the job can impact worker health negatively (Kolb & Aiello, 1996; Stanton & Julian, 2002). Health effects may range from musculoskeletal complaints (e.g., Franzblau et al., 1994; Westin, 1992) to increased stress (e.g., Aiello & Kolb, 1995; Nebeker & Tatum, 1993). Westin (1992) lists a number of workplace factors that may intensify or mitigate EPM effects. These include the amount of mobility at the work station, (self-)pacing of work, established evaluation standards, ergonomic work conditions, communication with employees, workplace training, employee involvement, and fair pay conditions. The multitude of variables may interact and influence the direct as well as indirect effects of EPM technology on employees' health and experience in the workplace. Based on the indirect effects of perceived control and job attitudes observed in our study, we suspect that EPM also might influence employee health indirectly through the same variables. Future research should test empirically whether EPM has indirect negative associations with short-term and long-term employee health. Practitioners might want to keep a close eye on health complaints when introducing EPM technology in the workplace can help to identify potential side effects associated with task repetitiveness, pacing, and task allocation that requires concentration or restricts natural movements (e.g., by operating specific equipment while sitting without moving for several hours at a time).

#### **4.2 Limitations and future research**

We would like to outline further limitations and future research arguments. Unfortunately, few studies to date focused on performance of student or part-time workers (but see examples such as Gakovic & Tetrick, 2003; Hom et al., 2009; Liu, Liu, & Hu 2010; Maynard et al., 2006; Shaw, 1999). This also means that we rely on literature involving full-time employees to develop hypotheses about part-time employees. While this is a short-coming of this work, our work is therefore one attempt to add to this more impoverished evidence base.

Nevertheless, one limitation is that we did not have a comparative sample of full-time employees against which to compare our results. This might be relevant as Marchese and Ryan (2001) noted part-time employees were less committed to the organisation, suggesting a stronger turnover effect for this type of sample. As a result, our findings can only complement the research on full-time employees but not used to examine specific differential effects. Addressing these issues will be one important concern in future sampling and replication efforts.

Age restrictions and job type prevalence may also limit generalizability (most aged up to 29 years of age). As over half of the sample reported being in customer-service

positions, one possibility is that the relationships observed in our study were driven to a large extent by service job types. For this reason, we recommend that future research efforts aim toward testing the generalizability of our findings across different job types, including those that are full-time and might not involve customer-service activities.

We also do not know what other effects EPM has had - via its impact on attitudes and perceived control. The indirect effects of EPM - beyond the impact on the attitudinal and control dimensions - may not have been as pronounced on the variables we selected. The indirect influence of monitoring on OCBs may need further investigation. We believe that the lack of support for an indirect effect on OCBs may possibly be explained in terms of the poor reliability of the measure. In addition, it is possible that the lack of variance in conscientiousness towards the organisation could have explained these results. One other possibility is that the number of hours worked predicts perceptions of centrality or importance to the organisation. In our sample, the monitored employees actually worked more than the electronically monitored sample (the number of hours worked were positively correlated with intended and actual OCBs). Future work should examine the dynamics involved between monitoring and hours worked in relation to OCBs with a direct examination of perceived centrality or value to the organisation.

We propose that future research should consider whether specific uses of EPM and types of EPM techniques qualify employee reactions to the implementation of the system. For example, is job satisfaction affected differently depending on whether monitoring occurs via camera (e.g., Beausoleil, 2009; Ulkemen, 2010; Wickström et al., 1996), over the phone (e.g., Westin, 1992), chats, phone calls, or email records (Klenke, 2004) or location monitoring such as GPS (Bolderdijk, Steg, & Postmes, 2013)? Also, are such techniques more readily accepted by some professions than others? Broadly speaking, future research should consider whether the costs to job satisfaction are outweighed by the benefits of better performance data when using various types of EPM in the workplace. The cost-benefit equation might change based on the job roles being monitored and the type of EPM techniques that are used.

### 4.3 Conclusion

This is first study to try and attempt to examine both monitored and not-monitored employee groups. It is also one of the first to examine EPM effects on attitudes, turnover, and organizational citizenship behaviours in a sample of part-time employees, thus building on previous work. Although our conclusions require replication with a different employee sample in order to generalise with confidence to other types of workers (e.g., workers with multiple jobs or volunteers), our research with part-time employees represents an important and first step forward in examining their employee perceptions in relation to EPM.

As demonstrated by past research and confirmed in this study, reducing perceived control can instigate negative job attitudes also in this group of employees. Furthermore, the results demonstrate how incorporating EPM in the workplace can have a negative domino effect on part-time employee intentions and turnover behaviours. Rather than showing a direct connection between EPM use and negative employee intentions and behaviours, our study found that those outcomes are influenced indirectly through reduced perceived control and negative job attitudes.



Using technology to support EPM might not inevitably have negative outcomes for employees and the organisation overall (see also Sarpong & Rees, 2013). However, if the context in which EPM is employed affects perceptions of control and leads to negative attitudes, negative employee outcomes (specifically turnover) may be more likely to occur. That said, we need to be careful to not ignore the social and cultural variables that influence EPM is implemented in the workplace (see Selwyn, 2012; Swanstrom, 2013; Jenkins & Thorburn, 2004). If introducing EPM leads to negative employee reactions in terms of perceived control and job attitudes, the negative reactions might predict negative employee behaviour.

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